REMARKS

Claims 17-31 and 33-46 remain in this application, with Claims 17, 18, 27, 29, 30, 31, 33 and 41 amended, and Claims 1-16 and 32 previously canceled. Applicants respectfully request reconsideration and review of the application in view of the foregoing amendments and following remarks.

Before addressing the merits of the rejections based on prior art, Applicants provide the following brief description of the invention. Generally, the invention relates to the control of a model train operating on a track. As known in the art, there are plural control protocols for controlling the operation of a model train. One such control protocol is referred to as the TRAINMASTER protocol, in which digital messages are communicated by the controller to the train. The digital messages define certain operating functions to be performed by the train, such as to set the running speed, blow the horn, couple/uncouple cars, emit smoke, and the like. The digital messages may be communicated to a receiver in the train using frequency shift key (FSK) modulation or other known communication protocols. The TRAINMASTER protocol is used in model trains sold by Lionel LLC, the assignee of the present patent application. Another known control protocol referred to as conventional control superimposes a positive or negative DC voltage offset onto the AC track voltage. The magnitude of the positive or negative DC voltage offset determines the operating function to be performed by the train. To control the magnitude of the DC voltage offset, the user manually changes the setting of a variable output transformer (such as by rotating a dial coupled to the transformer). There are other model train control protocols that are generally known in the art.

The plural control protocols are not compatible, so a model train configured for one type of protocol cannot be controlled by a controller unit configured for another type of protocol. Moreover, a train enthusiast cannot operate and control different trains on a single track layout if the trains do not share a common protocol. Applicants consider the

TRAINMASTER protocol advantageous in terms of providing a wider range of control features for the model train. Nevertheless, some model train enthusiasts still prefer to control the speed of the model train the old-fashioned way, i.e., by manually operating the variable output transformer to make throttle adjustments. The present invention solves this problem by providing a control system that detects changes in DC voltage offset produced by manual control of a variable output transformer, and converts these DC voltage offsets into digital control signals that can be communicated to the train via the TRAINMASTER protocol. Thus, the user can use the variable output transformer to make manual throttle adjustments in order to control the speed of model trains configured for the TRAINMASTER protocol. The invention further permits multiple model trains of different protocols to be controlled on a common track. Thus, the invention provides a method of conveniently controlling a variety of otherwise non-interoperable trains.

The Examiner rejected Claims 17-31 and 33-46 under 35 U.S.C. § 103(a) as unpatentable over Young et al. (U.S. Patent No. 5,749,547) in view of Young et al. (U.S. Patent No. 5,251,856). These rejections are respectfully traversed.

Young et al. '547 discloses an apparatus and method for control of model trains using a remote control unit. Referring to Fig. 13, for example, the remote control unit 12 has a keypad and dial that can be operated by a user to control train functions and speed. A separate transformer 20 is connected to the track and applies power to the track through a power master unit 150. The power master unit 150 is also used to superimpose DC control signals onto the AC power signals in order to control train functions and speed. A base unit 14 is also coupled to the track and communicates RF command signals to the track for controlling train functions. The remote control unit 12 transmits a wireless command signal to both the base unit 14 and to the power master unit 150. Thus, Young et al. '547 enables the same wireless remote control unit 12 to be used to communicate RF train commands to a suitable configured model train via the base unit 14, as well as DC offset signals to a conventional model train via the power

master unit 150.

While Young et al. '547 provides some improved convenience to the user in terms of enabling multiple model trains to operate on the same track under different command protocols, the reference fails to disclose fundamental aspects of the present invention. Specifically, Young et al. '547 does not provide any way to detect and convert DC offset signals into another protocol format. Even if the user of the Young et al. '547 system were to adjust the transformer 20 and thereby change the DC level, there is no control device that would detect the changes to DC level applied to the track and communicate corresponding signals in another protocol format to model trains having suitable receivers.

Young et al. '856 fails to make up for the deficiencies of Young et al. '547. In particular, Young et al. '856 discloses a control circuit for a model train that is backward compatible with a conventional E-Unit used to detect power interruptions signifying a change in direction. Conventional model train systems use a temporary interruption of AC power on the rails to indicate a desire by the user to reverse direction of the train. The E-Unit is a solenoid device carried by the model train that changes state when a power interruption is detected. The state change of the E-Unit reverses the direction of power applied to the locomotive engine, thereby enabling control over a reversal of direction. As with Young et al. '547, Young et al. '856 discloses a control system that communicates modulated control signals to the model train rather than using conventional DC level shifting. Young et al. '856 discloses an override connection to the E-Unit controller that enables remote control using digitally coded signals as well as backward compatibility with systems that use interruption of power to control the E-Unit. But, Young et al. '856 fails to disclose any control device or method that detects changes in DC level and converts these DC level changes to signals in another protocol.

Referring to the claims, the proposed combination of references fails to suggest or disclose all of the claim limitations. With respect to independent Claim 17, the

proposed combination of references fails to suggest or disclose, *inter alia*, "a voltage sensor disposed to sense the voltage provided by the transformer," "a controller connected to the said selection devices, the controller configured to determine a model train speed responsive to an input provided by the voltage sensor," and "a transmitter electrically connected between the output of said controller and said track, and operative to generate digital messages corresponding to said selection devices and the determined model train speed, and further operative to inject said digital messages onto said track." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to detect DC offset signals applied to the track and convert those signals into another protocol format for communication back onto the track.

With respect to independent Claim 27, the proposed combination of references fails to suggest or disclose, *inter alia*, "detecting an AC waveform supplied to a block of track upon which said model train travels, the AC waveform having a user selectable amplitude corresponding to a desired speed setting of the model train; establishing a first reference point of said waveform; sampling said AC waveform at a sampling point occurring after a pre-determined offset time interval following said reference point to obtain a sampled voltage level; determining the desired speed setting corresponding to said sampled voltage; and sending a speed control message to said model train identifying the desired speed setting." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to detect the desired speed setting by sampling the voltage applied to the track, and to send a speed control message to the model train identifying the desired speed setting.

With respect to independent Claim 33, the proposed combination of references fails to suggest or disclose, *inter alia*, "a voltage sensor in communication with the controller, the voltage sensor disposed to sense a model track voltage, wherein the controller further determines a commanded train speed responsive to an input from the voltage sensor." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to detect the desired speed setting by sensing the voltage applied to

the track.

With respect to independent Claim 43, the proposed combination of references fails to suggest or disclose, *inter alia*, "receiving an input voltage at the voltage input; determining a commanded train speed based on the input voltage; generating a speed command according to a command protocol, wherein the command protocol comprises a protocol selected from a digital command protocol and a DC-offset command protocol; and sending the speed command to the model train via the track using the command output." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to determine the commanded train speed based on the input voltage and to then communicate a speed command to the train according to a selected command protocol.

In view of the foregoing, the Applicants respectfully submit that Claims 17-31 and 33-46 are in condition for allowance. Reconsideration and withdrawal of the rejections is respectfully requested, and a timely Notice of Allowability is solicited. If it would be helpful to placing this application in condition for allowance, the Applicants encourage the Examiner to contact the undersigned counsel and conduct a telephonic interview.

To the extent necessary, Applicants petition the Commissioner for a two-month extension of time, extending to January 9, 2006 (the first business day following January 8, 2006), the period for response to the Office Action dated August 8, 2005. A check in the amount of $620.00 is enclosed for the two-month extension of time ($225.00) pursuant to 37 CFR §1.17(a)(2) and for request for continued examination (RCE) ($395.00) pursuant to 37 CFR § 1.17(e). The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-0639.

Respectfully submitted,

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